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**RELATIONAL PLURALISM, UNCERTAINTY, AND
NEW TIE FORMATION – A DYNAMIC NETWORK
ANALYSIS IN THE FINTECH DOMAIN**

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ABSTRACT

This research presents a dynamic, firm-level study of the role of relational pluralism in determining inter-organizational tie evolution. Our study offers a new perspective of relational pluralism as mechanisms for reducing the uncertainty that enables firms to improve performance, suggesting that uncertainty positively influences the new inter-organizational ties formation. Using a sample of 130 firms across the financial technology sector in Germany during the period 2008–2018, we find support for the argument and suggesting that firms may create relational pluralism as a multi-dimensional relation to managing the inter-organizational collaborations. By developing a richer understanding of relational pluralism, we answer the call for a better understanding of how and when firms can leverage their existing multiple networks to advantageously shape opportunities and inducements to facilitate inter-organizational network development.

Keywords: Fintech; relational pluralism; interorganizational relationships; uncertainty; network change

INTRODUCTION

Research on relational pluralism has grown considerably in the last decade.

“Relational pluralism exists when actors maintain multiple kinds of relationships with one another and develop multiple identities as a result. The outcomes of relational pluralism can include greater flexibility in building network ties, more stable exchange relationships, and the ability to adopt tailored innovations” (Shipilov, Gulati, Kilduff, Li, & Tsai, 2014). Firms expand their multiple inter-organizational networks by incorporating new players in an effort to alleviate the uncertainty and using their network resources and firm capabilities which derive from firms’ previous relational pluralism relationships. Thus, in this paper, we address the relational pluralism as a network resource of organizations and its impact on organizational network evolution over time. It is well established that network relationships emerge from other relationships or prior ties in organizations (Gulati & Gargiulo, 1999), yet our understanding of multiple networks formation is not complete. The inter-organizational literature offers a limited explanation of network structure emergency and the interdependencies that drive multiple kinds of relationships formation. We forward this line of inquiry by examining how network mechanisms affect the formation of new ties, and the reproduction of pre-existing ties over different time horizons. We focus on the firm level and consider social factors that influence the extent to which firms participate in new relational pluralism over time.

Through a relational, socio-structural network lens (Ahuja, 2000) we study an organizations’ partnership formation strategy as a firm considers its future partnering activities (Wang, Rodan, Fruin, & Xu, 2014). We posit that the “multiplex and multifaceted ties” (Shipilov et al., 2014; Shipilov & Li, 2014) with partners which allow network participants to proactively respond to uncertainty (Baum, Cowan, & Jonard, 2010). Using data collected on partnership arrangements in the German Financial Technology (Fintech) sector .

In addition, by comprising of partnering choices that formed over a decade (2008-2018) – with a monthly frequency of partnership alteration for a series of 130 individual Fintech firms, we explore how newcomers and incumbents to the relation pluralism as network resource to enhance firm's network capabilities and shape their future relationships, proactively or reactively, in anticipation to different level uncertainty. As firms decide to pair up with others or reinforce their current partnerships, this study considers how relational pluralism related to firms' new inter-organizational tie formation. We argue that relational pluralism speeds the establishment of a diverse multiple kind of inter-organizational networks, which, in turn, speeds the attainment of major network resources and capabilities in a firm.

Our research offers a number of contributions in advancing research on interorganizational relationships as they develop over time. To test this claim, we adopt a longitudinal study approach to assess the impact on the dual networks changes, reflected in the organization reactions to existing relational structure and future performance. In doing so, we test our hypothesis by the firms in the financial technology (Fintech) sector. During the financial crisis of 2008, a period of recession followed, leading to surging uncertainty and stagnation in the world. However, the financial crisis of 2008 also greatly facilitated an exceptional space for new players to enter the financial technology sector. Thus, we focus on how Financial technology firms form and utilize a central competitive interorganizational relationships after the financial crisis.

This research contributes to two bodies of literature. First, we advance the relational pluralism theory by adding a dynamic perspective. In particular, we investigate the consequences of relational pluralism and firms positions driven by the dynamic multiplex network ties. This is an important contribution because it increases our understanding of the dynamics of network positions, which is important. After all, we will have a greater

understanding of how firms to design and manage their network of business-partner relationships in a way that is beneficial for them under uncertainty over time.

First, we adopt a dynamic network perspective (Powell, White, Koput, & Owen-Smith, 2005) to examine the performance benefits and reveal of relational pluralism has a positive effect on organizations' performance.

Second, we contribute to network research by providing a unique context in which both the network change are impacted by different uncertainty over time. Our results indicate intriguing new empirical evidence highlighting the importance of time as a boundary condition in understanding embedded firm. Our findings also have important implications for practice. We find that on how organizations to form and utilize the dual networks to co-evolve with the technological landscape of the industry.

THEORY AND HYPOTHESES

Network resources and the entry of firms into relational pluralism

Relational pluralism generates the greater network resources from multiple kinds and multiple-layer of inter-organizational ties within networks over time. 'Relational pluralism as the extent to which a focal entity (a person, a team, or an organization) derives its meaning and its potential for action from relations of multiple kinds with other entities' (Shipilov et al., 2014). 'Network resources is a specific form of firm resources that can be considered to be strengths that firms can use to conceive of and implement their strategies' (Barney, 1991). At firm-level, relational pluralism encompasses various coexistence inter-organizational ties such as a firm's cooperation and competition ties or a board interlock and a strategic alliance ties with another firm. Some network scholars focus on origins and evolutionary dynamics of the dual social structure of markets that encompasses both collaborative and conflictual

interorganizational relationships (Sytech & Tatarynowicz, 2014; Uribe, Sytech, & Kim, 2019), there has been recent interest in multiple networks and multiple ties on the role of past collaboration in future successful interactions (Beckman, Schoonhoven, Rottner, & Kim, 2014; Howard, Withers, Carnes, & Hillman, 2016; Knoblen & Bakker, 2019). In this instance, our concern is by forming multiplex and multifaceted ties (Gulati, Kilduff, Li, Shipilov, & Tsai, 2010) with partners and prompting inter-organizational collaborations, thus relational pluralism in our research setting as an organization's multiple ties (a board interlock tie and a strategic alliance tie) to other organizations inside and outside industry. An interlocking directorate occurs 'when one person affiliated with one organization sits on the board of directors of another organization' (Mizruchi 1996: 271). Knowles proposed a general definition of interlocks as: "a member of the board of directors of one company sits on the board of directors of another company" (1973, p. 5), and Warner and Unwalla also define interlocking directorate as: "one man holds positions (directorships) in two corporations" (1967, p. 121). Thus we define interlocking directorate as two organizations are interlocked by a direct interlocking directorate –one individual is the link. According to the resource dependence perspective, interlocking directorates offer organizations an important network resource. Interlocks provide for information to be exchanged. Outside directors have access to a firm's performance data, are apprised of important investment proposals before they are implemented, and are able to bring their experience to bear on strategic problems confronting a firm (Baysinger and Hoskisson 1990). An "alliance" is a voluntary arrangement among independent firms to exchange or share resources and to engage in the co-development or provision of products, services, or technologies (Gulati, 1998). The boards of directors and alliances have a well-documented influence as important network sources (Raffaelli & Glynn, 2014; Rogan, 2014). Alliance partners provide additional information resources (Reuer, Zollo,

& Singh, 2002) and interlocking directorates (Gulati & Gargiulo, 1999) use their social networks to exchange valuable resources between firms.

Thus, the information as a network resource in relational pluralism can be exchanged or shared efficiently and effectively. In this regard, recent studies in networks have pointed to the importance of understanding the impact of multi-layered networks in predicting firm partner selection activities. Thus the prior networks through both interlocking directorates and strategic alliances are the rich sources of information from which firms can also select new potential partners. Relational pluralism offers wide-ranging opportunities, which holds the promise of reducing searching costs, increasing information efficiency. And ‘multiplexity might affect multiplexity’ (Gulati et al., 2010), the greater the extent of a firm’s network resources from the prior multiplexity ties between firms, the greater the likelihood new multiple kinds of ties they formed. Thus when firms maintain multiple kinds of relationships with one another and develop greater network resources as a result, this may well affect its propensity to the likelihood that the firm will engage in additional relational pluralism in the future.

Thus, this can be summarized in the following hypothesis:

Hypothesis 1 (H1): The greater the extent of a firm’s network resources from the network of prior relational pluralism, the greater the likelihood that it will enter a new relational pluralism in the future.

Uncertainty and the entry of firms into relational pluralism

Firms tackle the challenges of different uncertainties in addressing particular problems under different circumstances. Different types of uncertainty have been discussed and investigated in organization theory literature (Thompson, 2017). We begin with a general

definition of uncertainty in the organizational literature: ‘Uncertainty is the difficulty firms have in predicting the future, which comes from incomplete knowledge’ (Beckman, Haunschild, & Phillips, 2004).

Based on a resource dependence perspective (Pfeffer & Salancik, 1978), the bulk of prior research has focused on relational pluralism showing that firms choose to alter their existing multiple kinds of interorganizational networks and form their new interorganizational relationships in an attempt to reduce or cope with different uncertainties (Howard et al., 2016; Rogan, 2014). Firms cope with increases in uncertainty by forming linkages with other organizations that potentially can create complementarities with critical resources necessary to compete in the new environment (Pfeffer & Salancik, 1978). (Koka, Madhavan, & Prescott, 2006) examined the relationship between environmental change (uncertainty) and patterns of network change. The nature of the uncertainty facing the firm may drive new network partners selection. Thus, we need to consider the simultaneous effect of changes in different types of uncertainty in order to predict patterns of inter-organizational network changes.

Podolny (2001) offers an insightful perspective on how reducing two different types of market uncertainty: egocentric, which refers to a focal actor's uncertainty regarding the best way to convert a set of inputs to an output desired by a potential exchange partner, and altercentric, which denotes the uncertainty confronted by a focal actor's exchange partners regarding the quality of the output that the focal actor brings to the market. Base on Podolny's work, Beckman and colleagues (2004) have classified uncertainty as two type of uncertainty: firm - specific uncertainty—that which is unique to the firm, and the market uncertainty—affecting a broad set of firms, which derives from the environment more broadly and includes uncertainty created by macroeconomic or political factors that affects all firms. We seek to understand how both micro and macro level of uncertainty affect the likelihood of relational

pluralism formation in the future. Hence, we suggest that uncertainty can exist at two levels, firm and market.

Firm-Specific Uncertainty

Firm-specific uncertainty can arise both from internal and external firm-specific sources of uncertainty. But most of the time, firm-specific uncertainty can generate from a firm's internal sources. So, for example, firms might

Prior empirical studies examined the new partnership formation and firm-specific uncertainty. For example, Teece (1989) and (Powell, 1996) suggested that the relationship between firms uncertain and new partners selection. Firms create new interlocks when faced with declining solvency and profit rates—a likely source of firm-specific uncertainty (Mizruchi & Stearns, 1988). Also, Podolny (2001) argues that a diverse network is associated with egocentric (firm-specific) uncertainty.

To summarize, we expect firms to form new ties both interlocking directorates and strategic alliances in response to firm-specific uncertainty.

We formulate Hypothesis 2 as follows:

Hypothesis 2a (H2a): Firm uncertainty has a positive effect on a firms propensity towards relational pluralism, increases the likelihood that a firm will pursue new relational pluralism in the future.

Market Uncertainty

‘Market uncertainty is external and shared across a set of firms’(Beckman et al., 2004). There are many studies investigated the various market uncertainty, such as Competitive uncertainty (Wiersema & Bantel, 1993), cost uncertainty (McGrath, 1997),

demand uncertainty (March, 1978). A firm cannot manage the systemic market uncertainty by itself. Instead, those studies found that firms develop the new inter-organizational relationships to stem network resources and migrate market uncertainty.

This can be summarized in the following hypothesis:

Hypothesis 2b (H2b): Market uncertainty has a positive effect on a firm's propensity towards relational pluralism, increases the likelihood that a firm will pursue new relational pluralism in the future.

Firm capabilities and the entry of firms into relational pluralism

Organizational capabilities, like resources, are likely to significantly enhance firm performance (Barney, 1991). In our research setting, firm capabilities define as 'firms build external relationships with other organizations may be better able to exploit their internal managerial capabilities to enhance their performance' (Gulati, 1999).

By participating in relational pluralism, firms can develop managerial capabilities with forming relational pluralism efficiently and quickly to build multiple kinds of relationships responses to industry trends. The more relational pluralism a firm has been engaged in, the greater its exposure to potential instances to learn and gather knowledge on how to manage complicated multiple kinds of relationships. Levinthal and March (1993) show that firms' propensity for continued use and development of existing and capabilities skills. These capabilities skills are likely to propel changes in relational pluralism over time.

Hypothesis 3 (H3): The greater a firm's relational pluralism formation capabilities, the greater the likelihood that will enter a new relational pluralism in the future.

METHODS AND RESULTS

Data sources and sample

In accordance with prior research, we used partnership data from Thomson Financial's SDC Platinum database (Casciaro 2003; Rosenkopf et al. 2001). In addition, we also draw from the data from Factiva database and Lexis-Nexis database to identify alliance relationship. We collected board data from the BoardEX database of Wharton Research Data Services (WRDS). In addition, we checked board data with firms' proxy statements. For the firm's performance information, these data are collected from the COMPUSTAT database and firms' annual reports.

Variables

Dependent Variables

The dependent variable, we examined if the duration of time since a firm last has relational pluralism altered its current likelihood of entering a new alliance.

The Independent Variables

There are three independent variables, each was measured, Following prior definitions (Shipilov et al., 2014) and consistent with prior works (Beckman, Schoonhoven, Rottner, & Kim, 2014a; Beckman et al., 2014b; Howard, Withers, Carnes, & Hillman, 2016; Knoben & Bakker, 2019), relational pluralism was measured the formation of alliance ties formed between firms that with the board interlock ties.

Controls.

To help rule out possible competing explanations, we included a set of control variables, which reflect both the influence of endogenous and exogenous variables that may

drive their evolution including firm size, firm age, the board size, duration, and firm alliance experience.

Analysis

In the OLS regression analysis, we employ a Heckman model to control for the selection effects, under which observations may appear in the final regression model for unknown reasons and result in biased parameter estimations. In general, the regression results support our hypotheses. Specifically, the regression results support H1~H4.

Results

Our hypotheses suggest that when firms experience greater uncertainty over time, they may build another multi-functional exchange relationship with the new partners to achieve their competitive advantage. Overall, we add insights to the inter-organizational network literature on how firms proactively initiate in designing their inter-organizational networks with multiple kind of ties for greater flexibility in selecting network ties in the future, especially when firms confront greater uncertainty, shapes critical network outcomes.

DISCUSSION

Relational pluralism exists when an individual or organization are connected by multiple kinds of ties. By understanding the relational pluralism, we exam this consequences of relational pluralism for Fintech firms' ~~network evolution~~ over time. Our findings provide important theoretical implications for the unique role of relational pluralism in interorganizational dependence and tie formation. We interpret these results in the context of the current debate on the evolutionary dynamics of interorganizational networks.

FUTURE RESEARCH

The current research of relational pluralism seeks to direct the scholarly attention to the antecedents or the consequences of the connecting multiplex ties. We hope in future research to explore how firms manage and govern the multiplex relationships can be studied in greater detail.

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